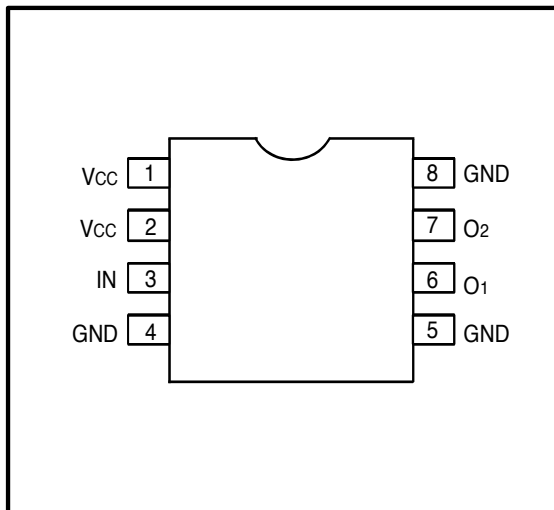


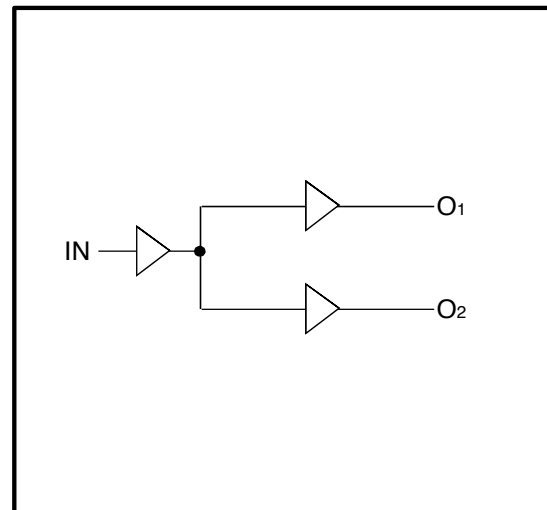
## 1GHz TTL/CMOS Potato Chip

<b>FEATURES:</b>	<b>DESCRIPTION:</b>
<ul style="list-style-type: none"> <li>. Patented technology</li> <li>. Max input frequency &gt; 1GHz</li> <li>. Operating frequency up to 1GHz with 2pf load</li> <li>. Operating frequency up to 700MHz with 5pf load</li> <li>. Operating frequency up to 400MHz with 15pf load</li> <li>. Operating frequency up to 200MHz with 50pf load</li> <li>. Very low output pin to pin skew &lt; 20ps</li> <li>. VCC = 1.65V to 3.6V</li> <li>. Propagation delay &lt; 1.3ns max with 15pf load</li> <li>. Low input capacitance: 3pf typical</li> <li>. 1:2 fanout</li> <li>. Available in 8 pin SOIC package</li> </ul>	<p>Potato Semiconductor's PO74G38072A is designed for world top performance using submicron CMOS technology to achieve 1GHz TTL output frequency with less than 20ps output pin to pin skew.</p> <p>PO74G38072A is a 3.3V CMOS 1 input to 2 outputs Buffered driver to achieve 1GHz output frequency. Typical applications are clock and signal distribution.</p> <p>Inputs can be driven from either 3.3V or 5V devices. This feature allows the use of these devices as translators in a mixed 3.3V/5V system environment.</p>

### Pin Configuration



### Logic Block Diagram



### Pin Description

Pin Name	Description
IN	Input
Ox	Outputs

## 1GHz TTL/CMOS Potato Chip

### Maximum Ratings

Description	Max	Unit
Storage Temperature	-65 to 150	°C
Operation Temperature	-40 to 85	°C
Operation Voltage	-0.5 to +4.6	V
Input Voltage	-0.5 to +5.5	V
Output Voltage	-0.5 to Vcc+0.5	V

**Note:**

stresses greater than listed under Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability specification is not implied.

### DC Electrical Characteristics

Symbol	Description	Test Conditions	Min	Typ	Max	Unit
<b>VOH</b>	Output High voltage	Vcc=3V Vin=VIH or VIL, IOH= -12mA	<b>2.4</b>	<b>3</b>	-	<b>V</b>
<b>VOL</b>	Output Low voltage	Vcc=3V Vin=VIH or VIL, IOH=12mA	-	<b>0.3</b>	<b>0.5</b>	<b>V</b>
<b>VIH</b>	Input High voltage	Guaranteed Logic HIGH Level (Input Pin)	<b>2</b>	-	<b>Vcc</b>	<b>V</b>
<b>VIL</b>	Input Low voltage	Guaranteed Logic LOW Level (Input Pin)	<b>-0.5</b>	-	<b>0.8</b>	<b>V</b>
<b>IiH</b>	Input High current	Vcc = 3.6V and Vin = 5.5V	-	-	<b>1</b>	<b>uA</b>
<b>IiL</b>	Input Low current	Vcc = 3.6V and Vin = 0V	-	-	<b>-1</b>	<b>uA</b>
<b>VIK</b>	Clamp diode voltage	Vcc = Min. And IIN = -18mA	-	<b>-0.7</b>	<b>-1.2</b>	<b>V</b>

**Notes:**

1. For conditions shown as Max. or Min., use appropriate value specified under Electrical Characteristics for the applicable device type.
2. Typical values are at Vcc = 3.3V, 25 °C ambient.
3. This parameter is guaranteed but not tested.
4. Not more than one output should be shorted at one time. Duration of the test should not exceed one second.
5. VoH = Vcc – 0.6V at rated current

## 1GHz TTL/CMOS Potato Chip

### Power Supply Characteristics

Symbol	Description	Test Conditions (1)	Min	Typ	Max	Unit
<b>Iccq</b>	Quiescent Power Supply Current	Vcc=Max, Vin=Vcc or GND	-	<b>0.1</b>	<b>30</b>	<b>uA</b>

**Notes:**

1. For conditions shown as Max. or Min., use appropriate value specified under Electrical Characteristics for the applicable device type.
2. Typical values are at Vcc = 3.3V, 25°C ambient.
3. This parameter is guaranteed but not tested.
4. Not more than one output should be shorted at one time. Duration of the test should not exceed one second.

### Capacitance

Parameters (1)	Description	Test Conditions	Typ	Max	Unit
<b>Cin</b>	Input Capacitance	Vin = 0V	<b>3</b>	<b>4</b>	<b>pF</b>
<b>Cout</b>	Output Capacitance	Vout = 0V	-	<b>6</b>	<b>pF</b>

**Notes:**

- 1 This parameter is determined by device characterization but not production tested.

### Switching Characteristics

Symbol	Description	Test Conditions (1)	Max	Unit
<b>tPLH</b>	Propagation Delay A to Bn	CL = 15pF	<b>1.3</b>	<b>ns</b>
<b>tPHL</b>	Propagation Delay A to Bn	CL = 15pF	<b>1.3</b>	<b>ns</b>
<b>tr/tf</b>	Rise/Fall Time	0.8V – 2.0V	<b>0.8</b>	<b>ns</b>

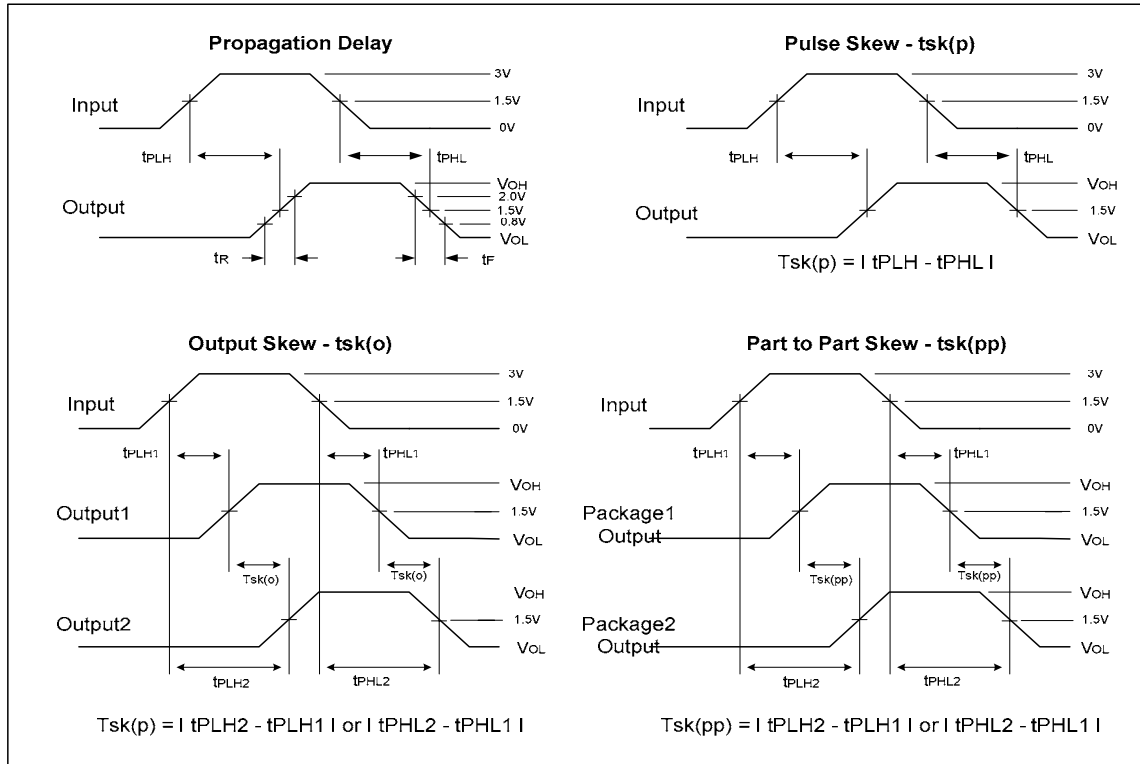
<b>tsk(o)</b>	Output Pin to Pin Skew (Same Package)	CL = 15pF, 125MHz	<b>20</b>	<b>ps</b>
<b>tsk(pp)</b>	Output Skew (Different Package)	CL = 15pF, 125MHz	<b>0.25</b>	<b>ns</b>
<b>fmax</b>	Input Frequency	CL = 50pF	<b>200</b>	<b>MHz</b>
<b>fmax</b>	Input Frequency	CL = 15pF	<b>400</b>	<b>MHz</b>
<b>fmax</b>	Input Frequency	CL = 5pF	<b>700</b>	<b>MHz</b>
<b>fmax</b>	Input Frequency	CL = 2pF	<b>1000</b>	<b>MHz</b>

**Notes:**

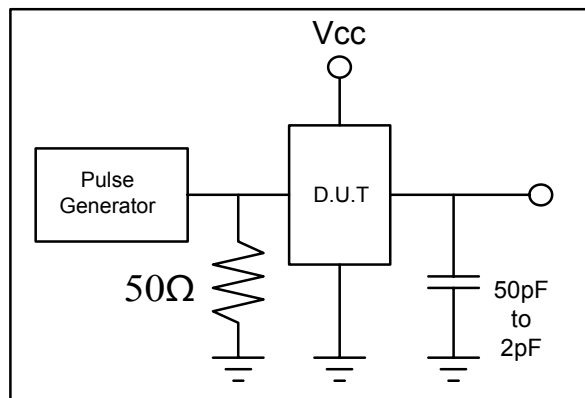
1. See test circuits and waveforms.
2. tPLH, tPHL, tsk(p), and tsk(o) are production tested. All other parameters guaranteed but not production tested.
3. Airflow of 1m/s is recommended for frequencies above 133MHz

## 1GHz TTL/CMOS Potato Chip

### Test Waveforms

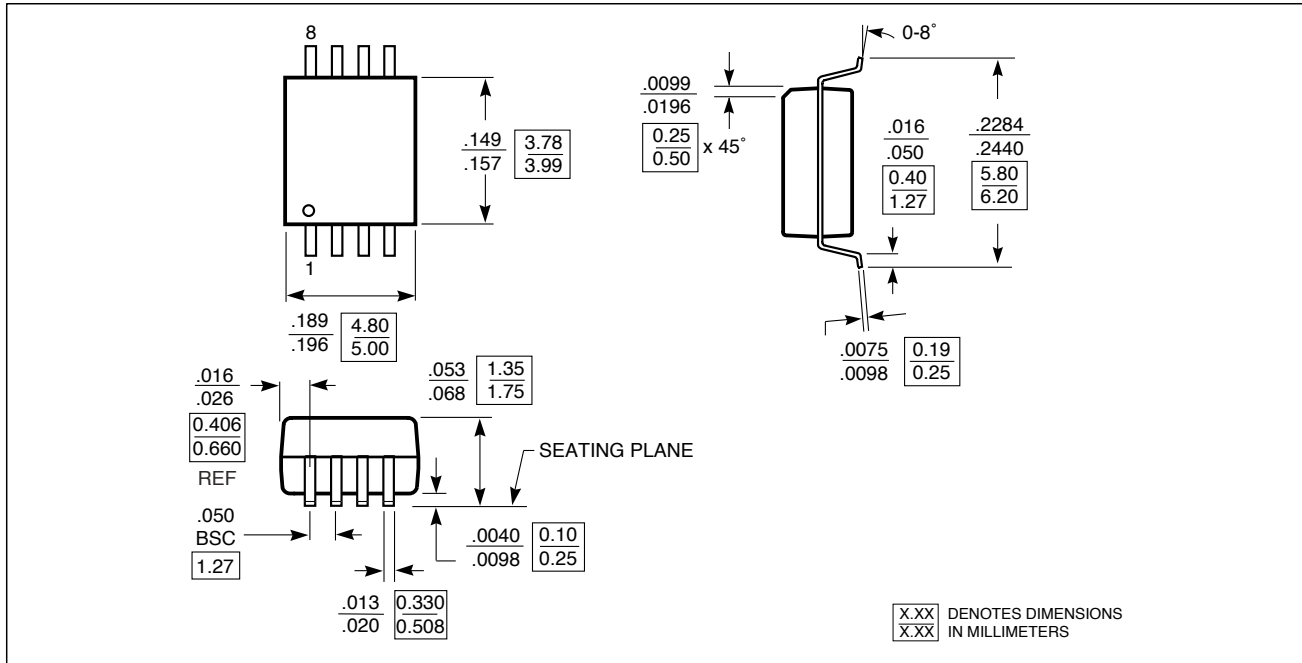


### Test Circuit



**1GHz TTL/CMOS Potato Chip**

**Packaging Mechanical Drawing: 8 pin SOIC**



**Ordering Information**

Ordering Code	Package			Top-Marking	T <sub>A</sub>
PO74G38072ASU	8-pin SOIC	Tube	Pb-free & Green	PO74G38072AS	-40°C to 85°C
PO74G38072ASR	8-pin SOIC	Tape and reel	Pb-free & Green	PO74G38072AS	-40°C to 85°C